

Solving Kolej Poly-Tech Mara Examination Timetabling Problem

M N M Kahar^{1,2}, Sarina Abu Bakar³, L C Shing¹, Ashis Kumar Mandal⁴

¹Faculty of Computer Systems & Software Engineering, University Malaysia Pahang,
Lebuhraya Tun Razak, Gambang, 26300 Kuantan, Pahang, Malaysia

²Soft Computing & Intelligent System (SPINT), Faculty of Computer Systems & Software Engineering,
University Malaysia Pahang, Lebuhraya Tun Razak, Gambang, 26300 Kuantan, Pahang, Malaysia

³Department Mathematics and Computer Science, Kolej Poly-Tech Mara Kuantan, KM 8 Jalan Gambang, 25150 Kuantan, Malaysia

⁴Dept of Computer Science and Engineering Hajee Mohammad Danesh Science and Technology University, Dinajpur-5200, Bangladesh
E-Mail: mnizam@ump.edu.my, sarina_ab@gapps.kptm.edu.my, lingshing_chang@msn.com, ashis@hstu.ac.bd

Examination timetabling involves assigning the exams into timeslots and rooms, fitting the student numbers into suitable exam locations, and ensuring adequate rest gaps between exams for all students. In this study, the examination timetabling problem from Kolej Poly-Tech Mara (KPTM) Kuantan, is being investigated. The KPTM dataset is a capacitated problem with unique constraints when compared to the benchmark examination datasets from the literature. Currently, KPTM Kuantan uses proprietary software to generate the timetable. However, it requires manual process to determine whether the timetable satisfies the constraints. Furthermore, having no mathematical model makes it difficult to determine the timetable quality. The research aim is to develop a formal mathematical model and test the proposed model by producing an examination timetable. The generated timetable is compared with the KPTM Kuantan proprietary software examination timetable. The experiment shows that our result outperforms the timetable produced by KPTM while adhering to the hard constraints which the proprietary software fails to achieve.

Keywords: Computational Intelligence, Examination Timetabling Problem, Metaheuristic